

Prince William-Manassas
Regional

Science and Engineering Fair



2022-23

Handbook for Science Fair Coordinators

Prince William - Manassas Regional Science and
Engineering Fair

An International Science and Engineering Fair Affiliate



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Mailing Address

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**Freedom of Information Act (FOIA), Civil Rights, Section 504
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Equity and Employee Relations Office • 703-791-8764

Section 504 Compliance (Students):

Director of Special Education • 703-791-7287

Title IX Compliance:

Title IX Coordinator and Student Equity Office • 571-374-6839

Family Educational Rights and Privacy Act (FERPA):

FERPA Officer • 703-791-7445

Introduction

Dear Science Fair Coordinators,

The purpose of this handbook is to assist you with the planning and execution of your local science fair and to ensure consistent quality of projects that enter the Prince William-Manassas Regional Science and Engineering Fair (PWMRSEF). Accordingly, the handbook is divided into two parts.

PART I outlines the rules and protocols that teachers and students must adhere to when conducting science fair projects at the school level.

PART II provides information on registration and procedures for the PWMRSEF.

Please take the time to read this handbook carefully. It is essential that you understand and communicate this information to your administration and colleagues before science projects begin and throughout the process. Failure to follow the guidelines may result in a situation where a student otherwise eligible for the regional fair is disqualified. It is also important to note that this manual is **not** intended for student-use.

The science team in the Student Learning Department is available to provide support as you undertake the tasks and responsibilities involved in overseeing student experimentation at your school and the subsequent registration process for regional fair entrants. If you have questions or require further information, please contact our office at 703-791-7240, or email inquiries to Veronica Kleinen, our administrative assistant, at kleinev@pwcs.edu or to me at renbergj@pwcs.edu.

Best wishes to you and your students as you work together to investigate interesting science-related phenomena and problems. We hope your school science fair is a great success and a positive experience for your students. We look forward to having enthusiastic students from your school participate in the regional science fair.

Sincerely,



Julia Renberg
Director, Prince William-Manassas Regional Science and Engineering
Fair Supervisor, Science, STEM, Robotics, & FLE, Prince William
County Public Schools

Part I

School Science Fair

Rules and Protocols

A Timeline for Getting Your School Science Fair

2023 Prince William-Manassas Regional Science and Engineering Fair (PWMRSEF)

Registration Deadline - **February 24, 2023**

The 2023 PWMRSEF will be held in a HYBRID format

Phase I “Virtual”: All Qualified Projects - **March 8-15, 2023**

Phase II “In-person”: Six Finalists Per Category

Set Up - **March 17, 2023**

Competition and Award Ceremonies - **March 18, 2023**

Public Announcement of Winners - **March 22, 2023**

October

- Set a date for your school fair that is suitable to your school’s schedule. Your school fair should be held no later than a week prior to the February 24, 2023 registration deadline for the PWMRSEF.
- Consider forming a science fair committee. Members of the committee would be responsible for tasks identified later. Encourage everyone on your faculty to participate in your school’s fair.

High school fair coordinators:

- Become familiar with the software *Scienceter* and affiliate your school with the PWMRSEF by October 15, 2023 using the link below. Schools that affiliated last year should update their coordinator information. The affiliation fee is \$100.00 per school and shall be paid by check to Prince William County Public Schools, Student Learning Department. Please send checks to 14715 Bristow Rd, Manassas, VA 20112. Note: PWCS covers the fee for all in-county schools.

Link for *Scienceter* Affiliation:

<https://www.scienceter.com/register/princewilliammanassasregionalsciencefair>

School and Teacher’s Guide at: https://scienceter.com/downloads/school_guide.pdf.

- Become familiar with the Intel International Science and Engineering Fair (Intel ISEF) Rules and Guidelines. The website for the Intel ISEF rules and FAQ is <https://student.societyforscience.org/international-rules-pre-college-science-research>.

Middle school coordinators:

- Become familiar with the procedures and forms used by PWMRSEF, as described in this handbook.

October - November

- Determine how and by whom science fair tasks (identifying and inviting judges; securing certificates and awards; coordinating recognition of winners, etc.) will be completed.

- Prepare and distribute your school’s science fair handbook to student participants and their families.
- Discuss rules and protocols with your faculty. Stress that students who plan to conduct experiments involving vertebrate animals, human subjects, or *potentially hazardous chemical or biological materials must have the project proposal approved and complete the appropriate protocol forms prior to experimentation.

November – December

- Ensure science fair committee members are progressing on their identified tasks. Ensure the member responsible for inviting judges has initiated contact with interested professionals by telephone, email, or letter. The number of judges you will need is dependent upon the size of your fair. It is suggested that large categories have an even number of judges who can divide up the projects and work in pairs. Smaller categories should have at least three judges.

Note: It is recommended that you avoid using teachers in your building and/or parents of your students as judges.

January – February

- Continue to oversee and monitor student progress on their projects. Remind students and their teachers of deadlines; provide feedback and support to students and parents as needed.
- When students complete their investigations, involve them in pair-share or class presentations so that they can practice explaining their research and become more comfortable communicating with others a summary of their research.

Before the School Fair

- Assign judges to categories and send them a reminder that includes the category they will be judging and any additional instructions. It is important that you brief judges on procedures for judging prior to the event.
- Check with committee members to ensure that awards have been ordered. Contact the Student Learning Department if you would like an electronic version or cardstock copies of the “Science Fair Participation” certificate, shown on page 7, to award to your students.

After the School Fair

- Publicize the results of your school fair, including the names of the students who will represent your school at the PWMRSEF.
- Distribute the *2023 Handbook for Regional Science Fair Participants* to all school fair winners eligible to participate in the regional fair. Encourage the teachers to notify parents that the handbook was given to their child.
- Promote winning student projects to the PWMRSEF in *Scienteer* (Grades 9-12), **ensure** the online registration has been completed (Grades 6-8 and 9-12) and **verify** that students have submitted their project presentations in *RocketJudge*. Please ensure that this information is shared **only** with the students whose projects are being promoted to the regional fair.
- Submit applicable protocol forms (Grades 6-8) and “Sponsor Release” forms (Grades 6-12) to Student Learning Department in the shared Office 365 folder.
- If you were informed that the project’s category was changed by the PWMRSEF review board, please notify the students and their parents **PRIOR** to March 17, 2023 – Regional Fair Set Up.

Project Categories for Grades 6-8 and 9-12

KEY POINTS

- Use the same categories as the Middle and Senior Divisions.
- Team projects of **no more than three students** are allowed.
- Two projects - the first/second place or the first-place tie in each category are eligible for the regional fair.
- Do **not** automatically award a first or second place in each category if the project(s) is/are not worthy of the regional competition.
- Review each proposal carefully. Regardless of category placement, projects with vertebrate animals, human subjects, or *potentially hazardous chemical or biological materials require completed protocol forms prior to experimentation. Grades 9-12 must follow the Intel ISEF guidelines and use their protocol forms in *Scienteer*. Grades 6-8 must use simplified protocol forms to be in compliance for entry into the PWRSEF.
- Detailed descriptions of topics in each category can be found on the ISEF website at <https://student.societyforscience.org/intel-isef-categories-and-subcategories>.
- Determine the category by assessing the project's purpose and ensuring consistency within each category at the fair. If you are unsure, contact the science team in the Office of Student Learning for guidance.
- Inform students, their teachers, and their parents when students' projects have been re-assigned to a different category prior to the school fair or regional competition.

Categories and Topic Descriptions

Category Name and Abbreviations	Topic Descriptions
Animal Sciences (AS)	genetics, physiology, pathology, and systematics
Behavioral and Social Sciences (BE)	human clinical and developmental psychology, cognitive physiological psychology, and sociology
Biochemistry (BI)	chemical processes within and relating to living organisms
Chemistry (CH)	analytical chemistry, inorganic chemistry, organic chemistry, and physical chemistry
Computational Biology and Bioinformatics (CB)	computational biomodelling, epidemiology, evolutionary biology, neuroscience, pharmacology, and genomics
Computer Science (CS)	algorithms/data bases, networking and communications, graphics, virtual reality, operating systems, and software engineering
Earth and Planetary Sciences (EP)	climatology, weather, geochemistry, mineralogy, tectonics, paleontology, and geophysics
Engineering (EN)	civil, constructional, chemical, industrial, electrical, computer, and mechanical engineering, materials sciences, bioengineering, and robotics
Environmental Sciences (EV)	air, soil, and water pollution/quality, bioremediation, environmental engineering, land resource management, recycling, and waste management
Materials Sciences (MS)	product testing, product development (biomaterials, ceramic and glasses, composite materials, computation and theory, electronic, optical, and magnetic materials, nanomaterials, polymers)
Mathematics (MA)	probability and statistics, and applied mathematics
Medicine & Health Sciences (MH)	disease diagnosis and treatment, epidemiology, human genetics, and pathophysiology
Microbiology (MI)	bacteriology, virology, and microbial studies
Physics (PH)	Newtonian physics, instrumentation and electronics, nuclear and particle physics, optics/lasers, and theoretical physics
Plant Sciences (PS)	agriculture, agronomy, horticulture, forestry, plant taxonomy and evolution, plant physiology, plant pathology, and plant genetics
Robotics and Intelligent Machines (RI)	Biomechanics, cognitive systems, control theory, machine learning, and robot kinematics

*Denotes categories that usually involve experimentation with vertebrate animals and/or human subjects and may use potentially hazardous chemical or biological materials; as such, they require completed protocol forms before experimentation

Rules for Conducting Experimentation

The PWMRSEF is an affiliate of the Intel ISEF. Policies and forms are vertically aligned to ensure compliance and consistency for all projects at all levels. Projects that do not adhere to the safety/sanitation guidelines might be disqualified.

I. Experimentation with Microorganisms

Microorganisms include, but are not limited to, bacteria, fungi (including molds), yeasts, and viruses.

Middle (Grades 6-8) Division participants are allowed to collect microorganisms of unknown origin from the environment (e.g., swabbing common surfaces, skin, soil). Cultures can be collected at home as long as they are immediately sealed and transported to an approved experimental location.

Students are prohibited from cultivating microorganisms at home.

Note: These rules do not apply to projects involving composting or decomposition of foods as long as projects are terminated at the first sign of microbial growth.

Experiments that involve cultures of known BioSafety Level 1 microorganisms (BSL-1) or of unknown origin from swabbing must be:

- Cultured in plates that are sealed with parafilm or placed in 2 heavy-duty sealed plastic bags;
- Disposed under the supervision of the designated supervisor while wearing a lab coat and disposable gloves and using any of the following aseptic techniques: autoclaving at 121 °C for 20 minutes, soaking in 10% bleach solution for 10 minutes, or incinerating.

II. Human (Research) Participants and Vertebrate Animals

Vertebrate Animals

Students must obtain **prior approval** for any project proposal involving vertebrate animals (fish, amphibians, reptiles, birds, and mammals) or humans. Students must complete the “Student Protocol for Research Involving Vertebrate Animals” or the “Student Protocol for Research Involving Human Participants” form and return it to the teacher for approval before any experimentation takes place. It is unethical to falsify any information on the forms.

Alternatives to the use of vertebrate animals for research should be explored. Alternatives include the “3 R’s”: **R**eplace vertebrate animals with invertebrates, lower life forms, tissue/cell cultures or computer simulations; **R**educe the number of animals without compromising statistical validity; and **R**efine the experimental design to lessen the pain or distress of the animal.

Projects involving vertebrate animals must only be observational in nature and must not interfere with the normal life processes of the organism. There may not be handling of the vertebrate animal in any way that interferes with its life processes. It is recommended that a veterinarian is consulted in experiments that involve supplemental nutrition and/or activities that would not be ordinarily encountered in the animal’s daily life. The following studies on vertebrate animals are **prohibited**:

- No vertebrate organism may be subjected in any way to stress (nutritional deficiency, oxygen deprivation, etc.) Behavioral studies involving mazes or other artificial structures are permitted if the effects of the structure are not stressful to the animal.
- Studies involving pain.
- Live predator/prey experiments (simulations are allowed).

Human Participants

Informed consent (permission slips) is necessary for some research with humans. Obtaining consent involves informing potential participants (and where applicable, the parents or guardians of minors) of the potential risks and benefits of the study and allowing the subject to make an educated decision to participate or to decline. Obtaining documentation of informed consent in the form of a permission slip completed by the parents/students is **not necessary** in the following cases:

- Research as a part of normal educational practices.
- Research on individual or group behavior or characteristics of individuals where the research does not manipulate the subjects' behavior in a harmful way.
- Surveys and questionnaires determined by the teacher and/or administration to involve perception, cognition, or game theory and do not involve gathering personal data.
- Studies involving physical activity where no more than minimal risk exists and where the probability and magnitude of discomfort anticipated in the research are not greater than those ordinarily encountered in daily life.

III. Biological Agents

Due to the safety risks associated with handling potentially hazardous biological agents, proposals for projects that involve human or vertebrate tissue/fluids **must** be reviewed and approved by the Prince William-Manassas Science Review Committee (SRB).

Middle (Grades 6 – 8) Division students **are** allowed to conduct experiments with human or vertebrate tissues that are: 1) meat or meat products from a store or restaurant treated to inhibit bacterial growth, naturally shed or cut hair, fossilized tissues, and sterilized teeth; 2) student's own bodily tissues, as long as the experimental proposal is pre-approved by the Prince William-Manassas Regional Science and Engineering Fair SRB and tissues are treated as BSL-1 biohazard; and 3) tissues from a biological supply house/catalog, hospital, or certified doctor/laboratory as long as the proposal is pre-approved by the Prince William-Manassas Regional Science Fair SRB and the tissues are treated as BSL-2 biohazard.

SRB approval requests should be emailed to renbergj@pwcs.edu with the proposal attached.

Prohibited in Experimentation

Chemicals listed as “prohibited” in the *2022-23 PWCS Science Education Safety Plan*. An e-version is posted on the PWMSEF website. Contact your Science Instructional Safety Liaison (SISL) or the science team in the Student Learning Department if you have questions and/or concerns.

All DEA controlled substances, prescription drugs, consumable alcohol, and tobacco.

Firearms, pneumatic guns, and other weapons and ammunition as defined by the PWCS Code of Behavior.

The following potentially hazardous biological agents are not allowed:

- Blood, skin cells, urine, saliva, tears, sweat, or other body fluid or tissue **not** from the student **themselves**.
- Biological agents that pose risk of infection or to the environment, including those that cause tuberculosis, pneumonia, food poisoning, and staph infections (MRSA).

Ionizing radiation has enough energy to remove tightly bound electrons from atoms, thus creating ions. Examples include high frequency UV, X-Rays, and gamma rays.

Allowed in Experimentation

The following low-risk biological agents are allowed but must remain in a sealed environment:

- Baker’s yeast and Brewer’s yeast.
- Nitrogen-fixing bacteria, oil-eating bacteria, and *Bacillus thuringiensis* (a common bacterium that live in soil and are harmful to insects), slime mold, and algae-eating bacteria, and *Lactobacillus* (bacteria found in yogurt and other dairy products).
- Mold grown on food items.
- Meat or meat by-products from food stores, restaurants, or packing houses.
- Hair and sterilized teeth.
- Specimens fixed on commercially prepared slides.
- Blood, skin cells, urine, saliva, tears, sweat, or other body fluid or tissue from the student **themselves** (BSL-1 biohazard) or from a biological supply house/catalog, hospital, or certified doctor/laboratory (BSL-2 biohazard), as long as the proposal is pre-approved by the PWMSEF SRB.

Non-ionizing radiation normally encountered in everyday life is allowed. Class I lasers of low power or higher power embedded lasers found in laser printers and other office machines, and Class II lasers that emit radiation in the visible portion of the spectrum are allowed.

Heat and open flames during experimentation are allowed, but only under direct adult supervision.

When in doubt, contact the science team in the Student Learning Department for further information.

Resources on Safety in Experimentation

Human as Research Participants

Penslar, R.L., (1993). *Institutional Review Board (IRB) Guidebook*. Washington, D.C.: ORRP-NIH
<https://www.hhs.gov/ohrp/education-and-outreach/archived-materials/index.html>

Animals as Test Subjects

The Guide for the Care and Use of Laboratory Animals, Institute of Laboratory Animal Research (ILAR), Commission on Life Sciences, National Research.

<https://grants.nih.gov/grants/olaw/olaw.htm>

John's Hopkins Center for Alternatives to Animal Testing (CAAT)

<http://caat.jhsph.edu/>

Biosafety Hazards

Biosafety in Microbiological and Biomedical Laboratories (5th Edition)

<https://www.cdc.gov/biosafety/publications/bmb15/BMBL.pdf>

Guidelines for Approved Research:

https://www.cdc.gov/biosafety/publications/bmb15/bmb15_appendixj.pdf

General Lab Safety

2021-22 Prince William County Public Schools Science Instruction Safety Plan

https://pwcs.edu/academics_programs/science_family_life_education

Animal Tissue and Microorganism Cultures Supply Companies

Carolina Biological Supply Company

<https://www.carolina.com/>

American Type Culture Collection

<https://www.atcc.org/>

Rules for Conducting Experimentation

Grades 9-12

High school students must adhere to the Intel ISEF Rules and Guidelines before conducting any experimentation, either at home or in a school or independent laboratory.

Prior approval is required for many areas of research, and it is the responsibility of the teacher and science fair coordinator to ensure that students have been provided with the ISEF rules and that appropriate project forms have been reviewed and approved prior to experimentation in the *Scienteer*.

Providing false information of any kind, including back-dating forms, is a violation of ethical practice and may result in disqualification from competition at the school, regional, or national/international level.

For a complete copy of the Intel ISEF Rules and Guidelines and the associated forms, visit their website at <https://student.societyforscience.org/international-rules-pre-college-science-research>.

Project Components

Projects of students in Grades 6 – 8 must meet the regional level judging criteria; projects of students in Grades 9 – 12 must meet the judging criteria set forth by the Intel ISEF.

PHASE I: VIRTUAL FAIR

The project presentation is the primary vehicle to share the content with our judges. It replaces the “traditional” science fair tri-fold board for your virtual display.

Grades 6-8

- PowerPoint (PPT) presentation (no more than 10 slides)
- Video presentation (no more than 4 minutes)

Grades 9-12

- Quad Chart (a single page for a quick overview)
- PowerPoint presentation (no more than 12 slides)
- Video presentation (no more than 2 minutes)
- Abstract (from the ISEF “Student Checklist 1A” form)

Visit the ISEF sites for project materials guidelines [Regeneron International Science and Engineering Fair - Society for Science](#) and samples of abstracts (<https://abstracts.societyforscience.org/>).

PHASE II: IN-PERSON FAIR

The Phase II is scheduled for top six finalists in each category. Students will have an opportunity to present their projects and answer questions from the judges. Students could select either a “traditional” tri-fold board or a digital format of PPT slides or Quad Chart to present their projects. Either option is acceptable. Please be sure to reference the judging criteria for whichever option the student chooses.

Tutorials for students will be provided to all participating students on November 1, 2022, on the PWMRFSEF public website. These will include:

- how to create an account in *Scienteer* (grades 9-12 only);
- how to create an effective PPT presentation;
- how to create an effective video presentation;
- how to record your presentation on YouTube; and
- how to upload your project presentation components into the *RocketJudge* platform.

Note: Students should not identify their school, teacher, or own last names.

Prince William – Manassas Regional Science and Engineering Fair
Middle Division (Grades 6-8)

JUDGING CRITERIA

Criterion	Description	Maximum Points
Title	A sentence that relates the independent and dependent variables	5
Experimental Design	The experimental process: Research Question Literature Review Hypothesis Independent Variable Dependent Variable Constants Control	35
Materials & Procedures	List of materials Procedures	10
Results*	Data Tables Graphs Written Explanation	15
Conclusion	R=Recall E=Explain R=Results U=Uncertainty N=New	10
Creativity*	Innovation and quality of ideas	15
Presentation	Understanding basic science relevant to the project, proper interpretation and recognition of limitations of results, clarity of presentation	10
TOTAL		100

Note. Considerable emphasis is placed on the criteria marked with asterisks (*).

Prince William – Manassas Regional Science and Engineering Fair

Senior Division (Grades 9-12)

JUDGING CRITERIA

Criterion	Points	Description
Research Question	10	<ul style="list-style-type: none"> • Clear and focused purpose • Identifies contribution to the field of study • Testable using science methods
Design and Methodology	15	<ul style="list-style-type: none"> • Well-designed plan and data collection methods • Variables and controls defined, appropriate and complete
Execution: Data Collection, Analysis, and Interpretation	20	<ul style="list-style-type: none"> • Systematic data collection and analysis • Reproducibility of results • Appropriate application of mathematical and statistics methods • Sufficient data collected to support interpretation and conclusions
Creativity*	20	<ul style="list-style-type: none"> • Project demonstrates significant creativity in one or more of the above criteria
Presentation*	35	<ul style="list-style-type: none"> • Logical organization of material • Clarity of graphics and legends • Understanding of basic science relevant to project • Understanding interpretation and limitations of results and conclusions • Degree of independence in conducting project • Recognition of potential impact in science, society, and/or economics • Quality of ideas for further research • For team projects, contributions to and understanding of project by all members
Total	100	

Note. Considerable emphasis is placed on the criteria marked with asterisks (*).

Part II

Prince William -Manassas Regional Science and Engineering Fair

Registration and Procedures

Registration Process for Participation in the Prince William-Manassas Regional Science and Engineering Fair

It is the responsibility of the science fair coordinator to work with students, whose projects were selected to advance to the regional fair, to oversee the process of registration.

Please, do **not** request that members of the science team register students from the central office.

The deadline for registration is firm. The database shuts down remotely at 4:00 on the deadline date. Avoid being the reason an eligible student is turned away - be sure to follow all the following steps:

All materials and links will be available in January 2023.

Step 1: Distribute the 2022-23 Handbook for Regional Science Fair Participants

- Give the e-handbooks to the appropriate teachers and be sure they distribute them to the eligible students or distribute the e-handbooks to the students directly.
- Stress to the students the importance of carefully reading the handbook and sharing the information with their parents/guardians.

Step 2: Registration of Eligible Students

- Provide the link to a Microsoft Office 365 “2023 Regional Fair Registration” form to the teachers of eligible students. You or the teachers should oversee students completing the registration process. Do **not** register a student without the student being present.
- Have the student complete the “2023 Regional Fair Registration” form by providing the following information:
 - Participant Information
 - ✓ Name (full legal name; i.e., “Kathryn” for “Kathy”)
 - ✓ Grade
 - ✓ Date of birth (i.e., 06/01/2004)
 - ✓ Gender
 - ✓ Student ID number (PWCS students should use their assigned number; students in other divisions and private and parochial schools must be assigned an ID number. It is highly recommended that the six digits of the birthdate be used—month, day, and last two numbers of the year.)
 - ✓ Home address (do not use the school’s address here)
 - ✓ Home phone number (do not use the school’s phone number here)
 - ✓ The name(s) of team members (if applicable)

- School Information
 - ✓ School name and address
 - ✓ School phone number
 - ✓ Name of science teacher
 - ✓ Name of science fair coordinator
 - Project Information
 - ✓ Project title (full title, correctly punctuated and capitalized)
e.g., *The Effect of Cellphone Use on Reaction Time of Teenagers*
 - ✓ Category (use the category the student's project was in at the school fair)
 - ✓ Indicate whether electricity is required
 - ✓ Research Question/Problem in complete sentences
- Birthdates must be entered in the proper format (mm/dd/yyyy).
- Have the student review the information carefully before clicking on "Submit."

NOTE: This information will be used to prepare the event program. Let's make sure our students and families feel proud by checking the grammar, including spelling and capitalization, beforehand!

Step 3: Submit Required Paperwork

Middle Division:

Collect all "Sponsor Release" forms and applicable protocol forms. Review the forms for completeness. Upload the "Sponsor Release" and protocols forms (below) in OneDrive.

- Projects involving human participants must submit the *Student Protocol for Research Involving Human Participants* form.
- Students using vertebrates in research must submit the *Student Protocol for Research Involving Vertebrate Animals* form.
- Students using potentially hazardous chemical or/and biological materials must submit *Student Protocol for Research Involving Potentially Hazardous Chemicals/Biological Materials* forms.

Senior Division:

- All high school projects must follow and submit the relevant protocol forms of the Intel ISEF. Falsifying protocol forms is unethical. All paperwork must be sent to the PWMRSF electronically via *Scienceteer*. Use the manual and YouTube tutorials, posted on the regional fair website, as needed.
- Collect all "Sponsor Release" forms. Review the forms for completeness. Upload the forms in OneDrive.

Step 4: Review List of Registered Projects

- You will receive an email list of the projects that have been registered from the Student Learning Department shortly before registration closes. Review the list carefully and follow up with any students who have not registered and their teachers to see if the student has opted not to register, or if registration was overlooked. Confirm your list of registrants.

Step 5: Remind Students to Upload Their Projects

- Remind students to upload their project presentation components for the Phase I: Virtual Judging to *RocketJudge* (see page 14).

Student Protocol for Research Involving Human Participants

(Grades 6-8)

Please print legibly or type.

Participant's Name: _____

Grade: _____

Project Category: _____

1. Explain why human participants are proposed or necessary for this research.

2. Describe if there are any potential risks (physical, psychological, or legal) involved.

3. How will your participants be informed of procedures involved in the investigation?

Informed consent is mandatory.

Have a sample of it submitted to your school's fair coordinator for approval.

4. What is the potential benefit or practical application of this research?

Teacher Validation of Approval **PRIOR to Research**

My review of this project plan indicates that there are no risks for this student researcher or for the humans involved in this investigation.

Teacher/Supervisor Name (Please Print)

Teacher/Supervisor (Signature)

Administrator's Initials: _____

Student Protocol for Research Involving Vertebrate Animals

(Grades 6-8)

Please print legibly or type.

Participant's Name: _____

Grade: _____

Project Category: _____

1. Explain why vertebrate animals are proposed or necessary for this research.

2. Describe if there are any potential risks (physical, psychological, or legal) involved.

3. Describe animal care procedures to be used during experimentation.

4. If an animal is acquired for this project, what is the source and what is your plan for the animal after the project is completed?

5. What is the potential benefit or practical application of this research?

My review of this project plan indicates that there are no risks for this student researcher or for the vertebrate animals involved in this investigation.

Teacher/Supervisor Name (Please Print)

Teacher/Supervisor (Signature)

Administrator's Initials: _____

Student Protocol for Research Involving Potentially Hazardous Chemical Substances, Activities, or Devices

(Grades 6-8)

Certain Hazardous Chemical Materials are prohibited/restricted at PWCS.

Prior to filling in this form, please check for details with your Science Fair Coordinator.

Please print legibly or type.

Participant's Name: _____ Grade: _____
Project Category: _____

1. Provide a list of chemicals/activities/devices and explain why they are proposed for this research.

2. Describe potential risks of use/disposal and protective measures to be followed.

3. Are any of them prohibited at Prince William County Public Schools per the 2022-23 PWCS Student Code of Conduct? (If yes, list the names and (for substances) amounts to be used).

4. What is the potential benefit or practical application of this research?

Teacher Validation of Approval **PRIOR** to Research

My review of this plan indicates that:

- 1) No substances from the 2022-23 PWCS Science Instructional Safety Plan "Prohibited Substances List" will be used; and
- 2) There are no risks involved or that *the potential risks are properly recognized and will be minimized to an acceptable level through the use of administrative controls and/or personal protection equipment.*

Teacher/Supervisor Name (Please Print)

Teacher/Supervisor (Signature)

Administrator's Initials: _____

Student Protocol for Research Involving Biological Materials

(Grades 6-8)

Certain Hazardous Biological Materials are prohibited/restricted at PWCS.

Prior to filling in this form, please check for details with your Science Fair Coordinator.

Please print legibly or type.

Participant's Name: _____

Grade: _____

Project Category: _____

1. Specify microorganisms (yeast, mold, or probiotic bacterial cultures) or biological tissues (urine, blood, muscle, bone, etc.) that you plan to use and explain why they are proposed for this work.

2. Describe potential risks involved and personal protective measures to be followed.

3. What is the source of your biological tissues or microorganisms?

4. Describe disposal procedures.

5. What is the potential benefit or practical application of this research?

Teacher Validation of Approval **PRIOR** to Research

My review of this plan indicates that the student understands proper techniques for handling and that there are no risks for the students while working with identified biological agents.

Teacher/Supervisor Name (Please Print)

Teacher/Supervisor (Signature)

Administrator's Initials: _____